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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/348,169	07/07/1999	YASUHARU YOSHIDA	FQ5-404	4848
21254	7590	10/24/2005	EXAMINER	
MCGINN INTELLECTUAL PROPERTY LAW GROUP, PLLC 8321 OLD COURTHOUSE ROAD SUITE 200 VIENNA, VA 22182-3817			LY, NGHI H.	
			ART UNIT	PAPER NUMBER
			2686	

DATE MAILED: 10/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/348,169

Applicant(s)

YOSHIDA, YASUHARU

Examiner

Nghi H. Ly

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 September 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-50 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-8, 10-14, 20-24, 30-35 and 40-50 is/are rejected.
- 7) ☒ Claim(s) 5, 9, 15-19, 25-29 and 36-39 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 09/20/05.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-4, 6-8, 10-14, 20, 21, 24, 30, 31, 34, 35 and 40-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over D'Amico et al (US 5,127,100) in view of D'Amico et al (US 5,159,593) and further in view of Gitlits (US 5,859,841), Barlett et al (US 5,557,603) and further in view of Shi (US 6,131,033) and Sexton et al (US 5,937,333).

Regarding claims 1, 4, 6, 13, 14, 40, 41, 43-50, D'Amico et al (US 5,127,100) teaches an automobile communications method for an onboard mobile station in a plurality of radio zones (see abstract) which are consecutively arranged along a road (see fig.1 see cells 22 to 26), comprising: providing each of the radio zones with a plurality of M communication frequencies (see column 3, lines 25-26), and switching between the M communication frequencies (see column 1, lines 17-19 and column 6,

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lines 24-26, D'Amico et al (US 5,127,100) inherently teaches switching between the plurality of communication frequencies, see column 3, lines 45-47, which clearly states "They can be dynamically changed under the control of central controller 30 based upon communication requirements. The frequency, bit rate and/or time slots of one or more cells can be independently controlled"), and a different one of the N time slots is allocated for adjacent radio zones (see column 3, lines 36-42) for each of the plurality of M communication frequencies (see column 3, lines 36-42 and column 3, lines 25-26).

D'Amico et al (US 5,127,100) does not specifically disclose providing N plurality of time slots in one period in each of the radio zones, switching a time slot allocated to the on-board mobile station to continuously communicate with the on-board mobile station across the plurality of radio zones.

D'Amico et al (US 5,159,593) teaches providing N plurality of time slots in one period in each of the radio zones (see column 2, lines 39-40), switching a time slot allocated to the on-board mobile station to continuously communicate with the on-board mobile station across the plurality of radio zones (see column 4 lines 21-24).

Therefore, it would have been obvious to one of ordinary skills in the art at the time of the invention was made to provide the above teaching of D'Amico et al (US 5,159,593) into the system of D'Amico et al (US 5,127,100) in order to reduce channel usage and save bandwidth by each base station.

The combination of D'Amico (US 5,127,100) and D'Amico (US 5,159,593) does not specifically disclose switching between the plurality of communication frequencies within each of the radio zones.

Gitlits teaches switching between the plurality of communication frequencies within each of the radio zones using a time division scheme (see column 1, lines 47-59) using a time division scheme (see column 6, lines 34-50).

Therefore, it would have been obvious to one of ordinary skills in the art at the time of the invention was made to provide the above teaching of Gitlits into the system of D'Amico et al (US 5,127,100) and D'Amico et al (US 5,159,593) in order to reduce co-channel interference.

The combination of D'Amico (US 5,127,100) and D'Amico (US 5,159,593) and Gitlits does not specifically disclose communication between the plurality of radio zones and the on-board mobile station is made using a single one of the M communication frequencies within at least a single radio zone.

Barlett teaches communication between the plurality of radio zones and the on-board mobile station is made using a single one of the M communication frequencies within at least a single radio zone (column 4, lines 12-16, see "the base station instructs the mobile to change its time slot with or without change of frequency").

Therefore, it would have been obvious to one of ordinary skills in the art at the time of the invention was made to provide the above teaching of Barlett into the system of D'Amico et al (US 5,127,100), D'Amico et al (US 5,159,593) and Gitlits so that the mobile station can handover without a change of frequency (see Barlett, column 4, lines 12-16).

The combination of D'Amico et al (US 5,127,100), D'Amico et al (US 5,159,593), Gitlits and Barlett does not specifically disclose a different one of the N time slots is

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allocated for adjacent radio zones for each of the plurality of M communication frequencies by sequentially.

Shi teaches a different one of the N time slots (see fig.3) is allocated for adjacent radio zones (see fig.1b) for each of the plurality of M communication frequencies by sequentially (see column 2, lines 59-63 and column 6, lines 61-64).

Therefore, it would have been obvious to one of ordinary skills in the art at the time of the invention was made to provide the above teaching of Shi into the system of D'Amico et al (US 5,127,100), D'Amico et al (US 5,159,593), Gitlits and Barlett in order to reduce internal interference (see Shi, column 2, lines 37-38).

The combination of D'Amico et al (US 5,127,100), D'Amico et al (US 5,159,593), Gitlits, Barlett and Shi does not specifically disclose switching from one to another at a time of every N/M time slot.

Sexton teaches switching from one to another at a time of every N/M time slot (column 5, line 37 to column 6, line 7, see "*time slot*" and "*changing the time/frequency reuse pattern*").

Therefore, it would have been obvious to one of ordinary skills in the art at the time of the invention was made to provide the above teaching of Sexton into the system of D'Amico et al (US 5,127,100), D'Amico et al (US 5,159,593), Gitlits, Barlett an Shi so that co-channel and adjacent channel interference can be reduced (see Sexton, column 5, lines 65-67).

Regarding claim 2, D'Amico et al (US 5,127,100) further teaches the time slot used for communication with the on-board mobile station is switched in such a manner

that communication with the on-board mobile station is continuously performed at one of the plurality of M communication frequencies over the plurality of radio zones (see D'Amico et al (US 5,127,100), column 3, lines 36-42 or column 6, lines 24-26).

Regarding claim 3, D'Amico et al (US 5,127,100) further teaches the time slot is switched in such a manner that communication with the on-board mobile station is continuously performed at different communication frequencies over the radio zones (see D'Amico et al (US 5,127,100), column 3, lines 36-42 or column 6, lines 24-26).

Regarding claim 7, D'Amico et al (US 5,127,100) further teaches the time slot allocated to the on-board mobile station is switched in such a way that the on-board mobile station uses a same communication frequency over the plurality of radio zones (see column 1 lines 17-19 and column 6 lines 24-26).

Regarding claims 8, 21 and 31, D'Amico et al (US 5,127,100) further teaches each of the predetermined communication frequencies is used for both transmission and reception to perform communication with the on-board mobile station (see column 6 lines 22-24) according to TDMA/TDD (Time Division Multiple Access/Time Division Duplex) scheme (see column 3 lines 62-65).

Regarding claims 10, 24 and 34, D'Amico et al (US 5,127,100) further teaches the plurality of predetermined communication frequencies comprises a plurality of different pairs of first frequencies and second frequencies, wherein the first frequencies are generated from one reference frequency in accordance with a first predetermined conversion so that the first frequencies are in a frequency-coherence state over the radio zones (see D'Amico et al (US 5,127,100) column 6 lines 19-28).

Regarding claim 11, D'Amico et al (US 5,127,100) further teaches the on-board mobile station generates a transmission local signal of the second frequency from a radio signal received from the fixed station system in accordance with a second predetermined conversion (see D'Amico et al (US 5,127,100) column 6 lines 19-28).

Regarding claims 12 and 35, D'Amico et al (US 5,127,100) further teaches the fixed station system generates a reception local frequency from the first frequency in accordance with the second predetermined conversion as used by the on-board mobile station so that the reception local frequency and a radio signal received from the on-board mobile station are in a frequency-coherence state (see D'Amico et al (US 5,127,100) column 6 lines 19-28).

Regarding claims 20 and 30, D'Amico et al (US 5,127,100) further teaches the on-board mobile station comprises frequency-in-use regenerator (see fig.2 box 60) for regenerating the communication frequency in use from a signal received from a fixed station which forms a radio zone for communication: and a communication controller controlling communication with the fixed station using the allocated time slot at the communication frequency in use (see column 6 lines 19-28).

Regarding claim 42, the modified of D'Amico et al (US 5,127,100), Gitlits, Barlett and Shi teaches the time division scheme (see Gitlits, column 1, lines 47-59 and column 6, lines 34-50). The modified of D'Amico et al (US 5,127,100), Gitlits and Barlett does not specifically disclose each time slot for each radio zone uses a different one of the plurality of M communication frequencies.

D'Amico (US 5,159,593) teaches each time slot for each radio zone uses a different one of the plurality of M communication frequencies (see column 2, lines 39-40 and see column 4 lines 21-24).

Therefore, it would have been obvious to one of ordinary skills in the art at the time of the invention was made to provide the above teaching of D'Amico et al (US 5,159,593) into the system of D'Amico et al (US 5,127,100), Gitlits, Barlett and Shi in order to reduce channel usage and save bandwidth by each base station.

4. Claims 22, 23, 32 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over D'Amico et al (US 5,127,100) in view of D'Amico et al (US 5,159,593) and Gitlits (US 5,859,841) and further in view of Barlett et al (US 5,557,603) and Shi (US 6,131,033) and further in view of Sexton et al (US 5,937,333) and Horiguchi (US 5,737,329).

Regarding claims 22, 23, 32 and 33, the combination of D'Amico et al (US 5,127,100), D'Amico et al (US 5,159,593), Gitlits, Barlett, Shi and Sexton teaches each of the plurality of predetermined communication frequencies is used for transmission and reception frequencies and wherein the communication controller carries out communication with the fixed station according to a TDMA/TDD scheme using the oscillation frequency as a transmission local frequency (see rejection of claims 8 and 16 above) and frequency-in-use regenerator (see D'Amico et al (US 5,127,100), fig.2 box 60). The combination of D'Amico et al (US 5,127,100) and D'Amico et al (US 5,159,593), Gitlits, Barlett, Shi and Sexton does not specifically disclose the regenerator

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comprises: a demodulator for demodulating the received signal, and a phase controller for performing phase control on a signal of an oscillation frequency based on an output of the demodulator such that the demodulator acquires synchronization.

Horiguchi teaches the regenerator comprises: a demodulator for demodulating the received signal (see column 2 lines 28-31), and a phase controller for performing phase control on a signal of an oscillation frequency based on an output of the demodulator such that the demodulator acquires synchronization (see fig.10B connection between boxes 240b and 210b, 270 and 210b).

Therefore, it would have been obvious to one of ordinary skills in the art at the time of the invention was made to provide the above teaching of Horiguchi into the system of D'Amico et al (US 5,159,593) and D'Amico et al (US 5,127,100), Gitlits, Barlett, Shi and Sexton so that the transmission signals transmitted from the first and the second transmitter-receiver can be communicated without any interference (see column 5 lines 27-30).

Allowable Subject Matter

5. Claims 5, 9, 15-19, 25-29 and 36-39 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claims 5, 9, 15, 25 and 36-39, the combination of D'Amico et al (US 5,127,100), D'Amico et al (US 5,159,593), Gitlits, Barlett and Sexton teaches the automobile communication method according to claim 1, 4 and 13. The combination of

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D'Amico et al (US 5,127,100), D'Amico et al (US 5,159,593), Gitlits, Barlett and Shi, alone or in combination, fails to teaches fails to teach the plurality of predetermined communication frequencies in each radio zone are generated from a single reference frequency in according with a predetermined conversion to be in a frequency-coherence state.

Response to Arguments

6. Applicant's arguments with respect to claims 1-4, 6-8, 10-14, 20-24, 30-35 and 40-50 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nghi H. Ly whose telephone number is (571) 272-7911. The examiner can normally be reached on 8:30 am-5:30 pm Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marsha Banks-Harold can be reached on (571) 272-7905. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

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you have questions on access to the Private PAIR system, contact the Electronic
Business Center (EBC) at 866-217-9197 (toll-free).

Nghi H. Ly

NHL
10/20/05



**CHARLES APPIAH
PRIMARY EXAMINER**